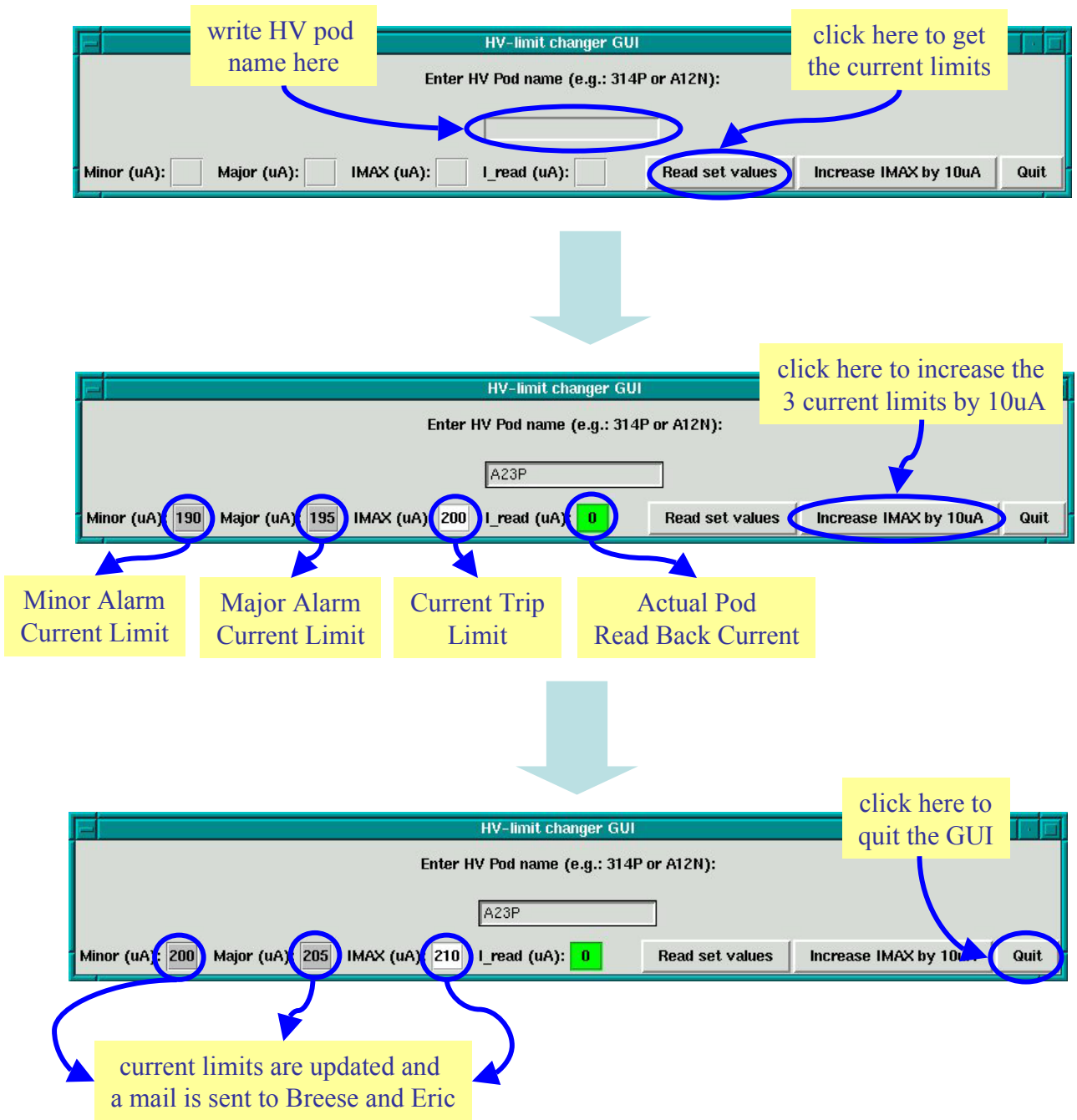
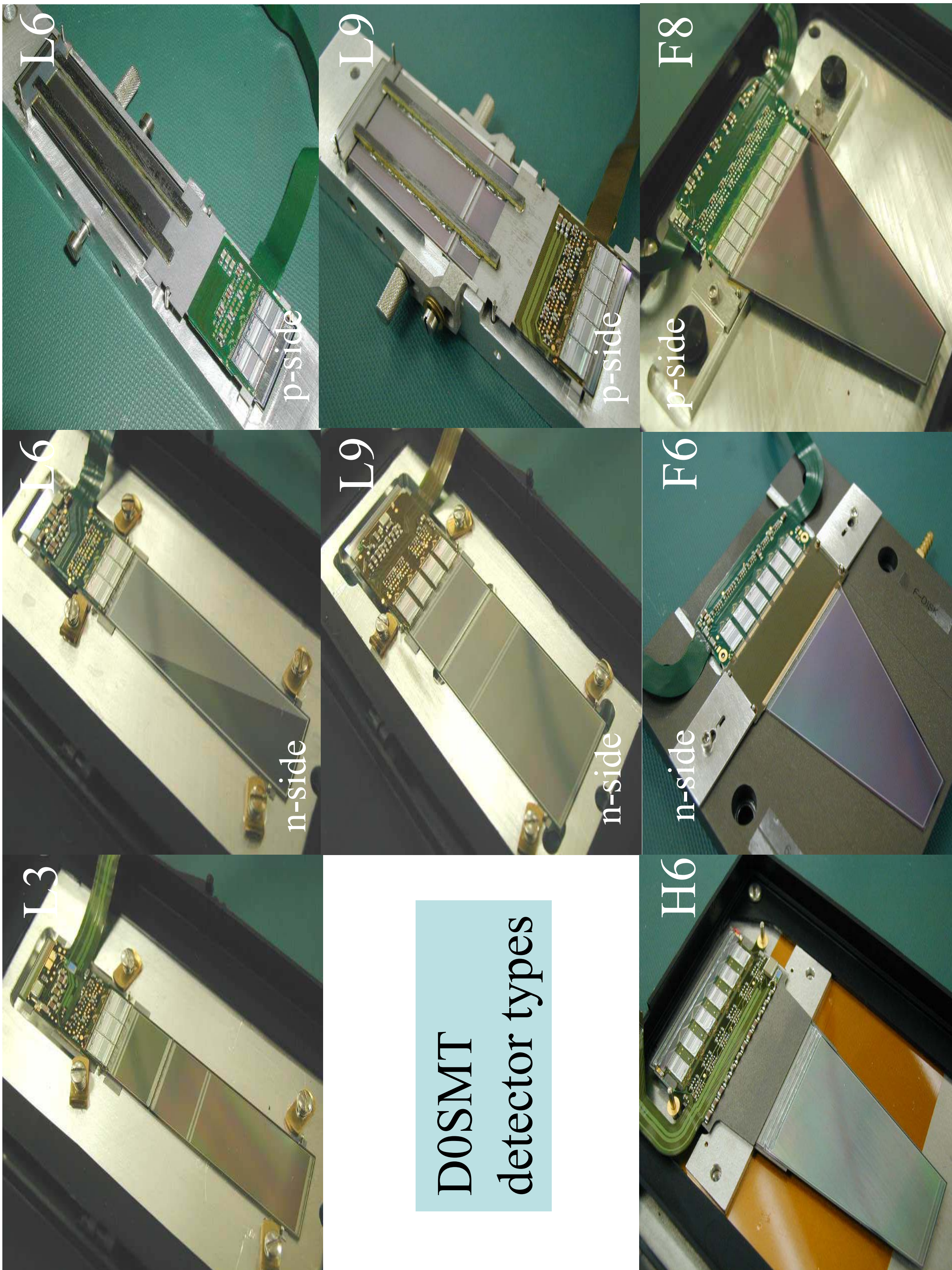
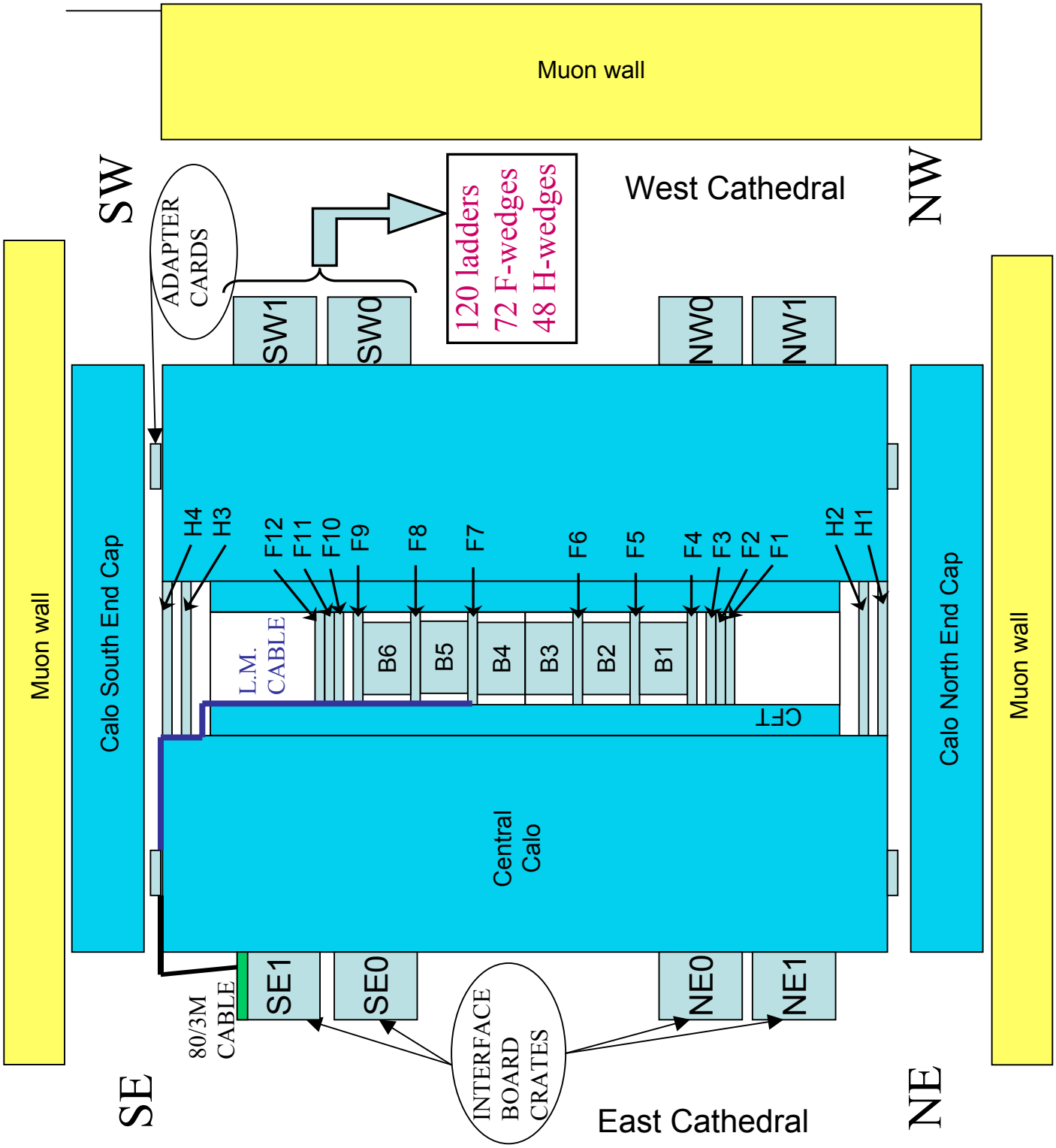
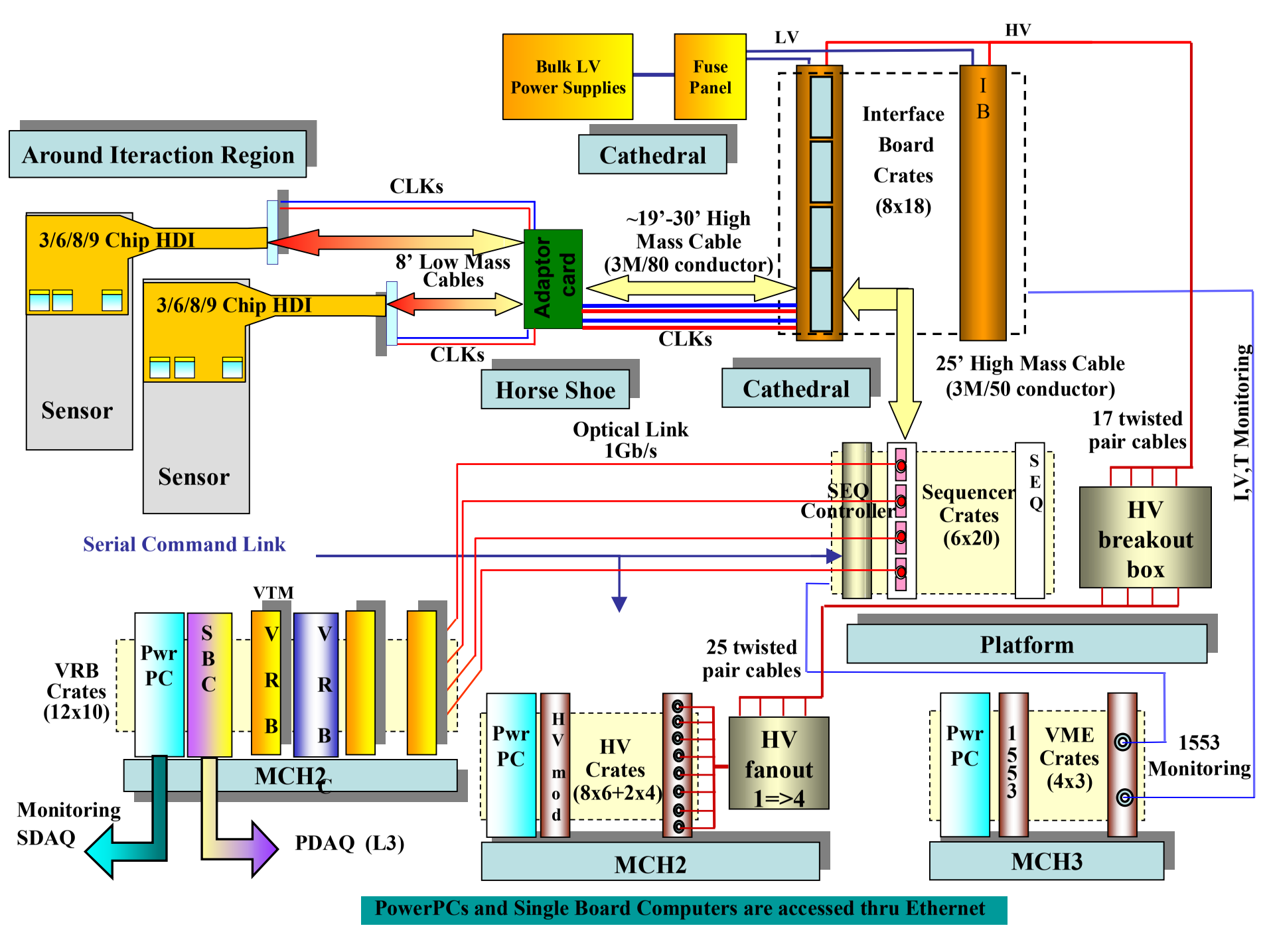
HV current limit GUI

Start the HV current limit GUI using the « GUI starter » GUI, Page B, button 4
(to start the GUI starter, type in a terminal window: cd; setup d0online; ./startguis.py)




L6
p-side
L9
p-side
F8
p-side
L6
n-side
L9
n-side
F6
n-side
L3
D0SMT
detector types
H6


Muon wall
SW
ADAPTER CARDS
120 ladders
72 F-wedges
48 H-wedges
West Cathedral
NW
SW1
SW0
NW0
NW1
Muon wall
Calo South End Cap
Calo North End Cap
Muon wall
H4
H3
F12
F11
F10
F9
F8
F7
F6
F5
F4
F3
F2
F1
H2
H1
L.M. CABLE
B6
B5
B4
B3
B2
B1
CFT
Central Calo
80/3M CABLE
SE1
SE0
NE0
NE1
INTERFACE BOARD CRATES
SE
East Cathedral
NE
Muon wall

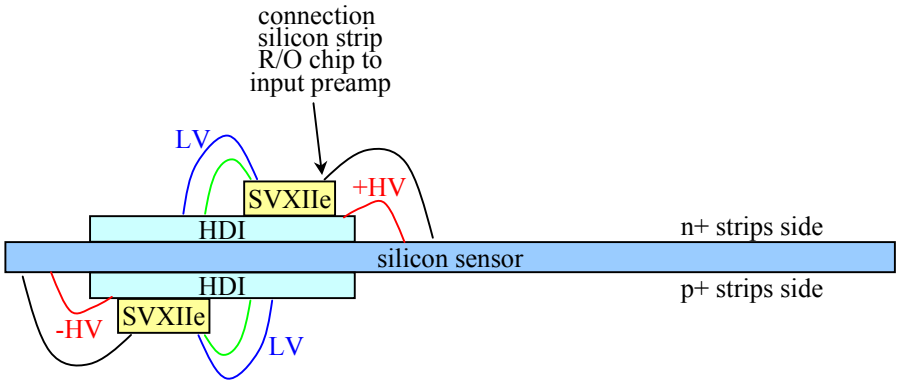

Bulk LV Power Supplies
Fuse Panel
LV
HV
Cathedral
Around Iteraction Region
Interface Board Crates (8x18)
I B
CLKs
3/6/8/9 Chip HDI
8' Low Mass Cables
Adaptor card
~19'-30' High Mass Cable (3M/80 conductor)
3/6/8/9 Chip HDI
CLKs
CLKs
Horse Shoe
Cathedral
25' High Mass Cable (3M/50 conductor)
Sensor
Sensor
Optical Link 1Gb/s
17 twisted pair cables
I,V,T Monitoring
SEQ Controller
Sequencer Crates (6x20)
S E Q
HV breakout box
Serial Command Link
VTM
Platform
25 twisted pair cables
VRB Crates (12x10)
Pwr PC
S B C
V R B
V R B
MCH2
Pwr PC
H V m o d
HV Crates (8x6+2x4)
HV fanout 1=>4
Pwr PC
1 5 5 3
VME Crates (4x3)
1553 Monitoring
Monitoring SDAQ
PDAQ (L3)
MCH2
MCH3
PowerPCs and Single Board Computers are accessed thru Ethernet

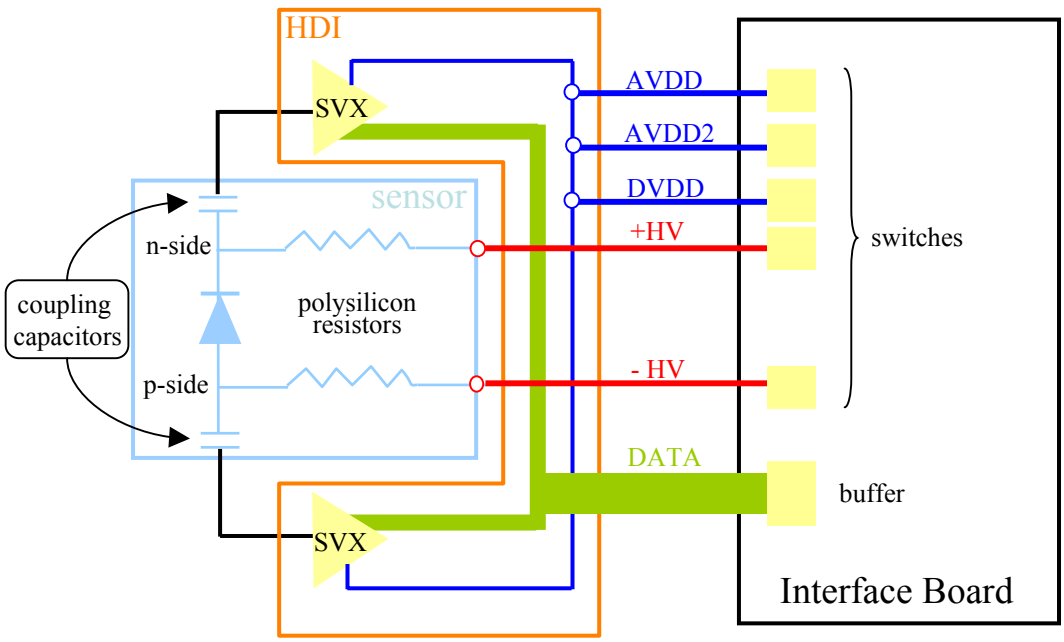
About LV and HV (1)

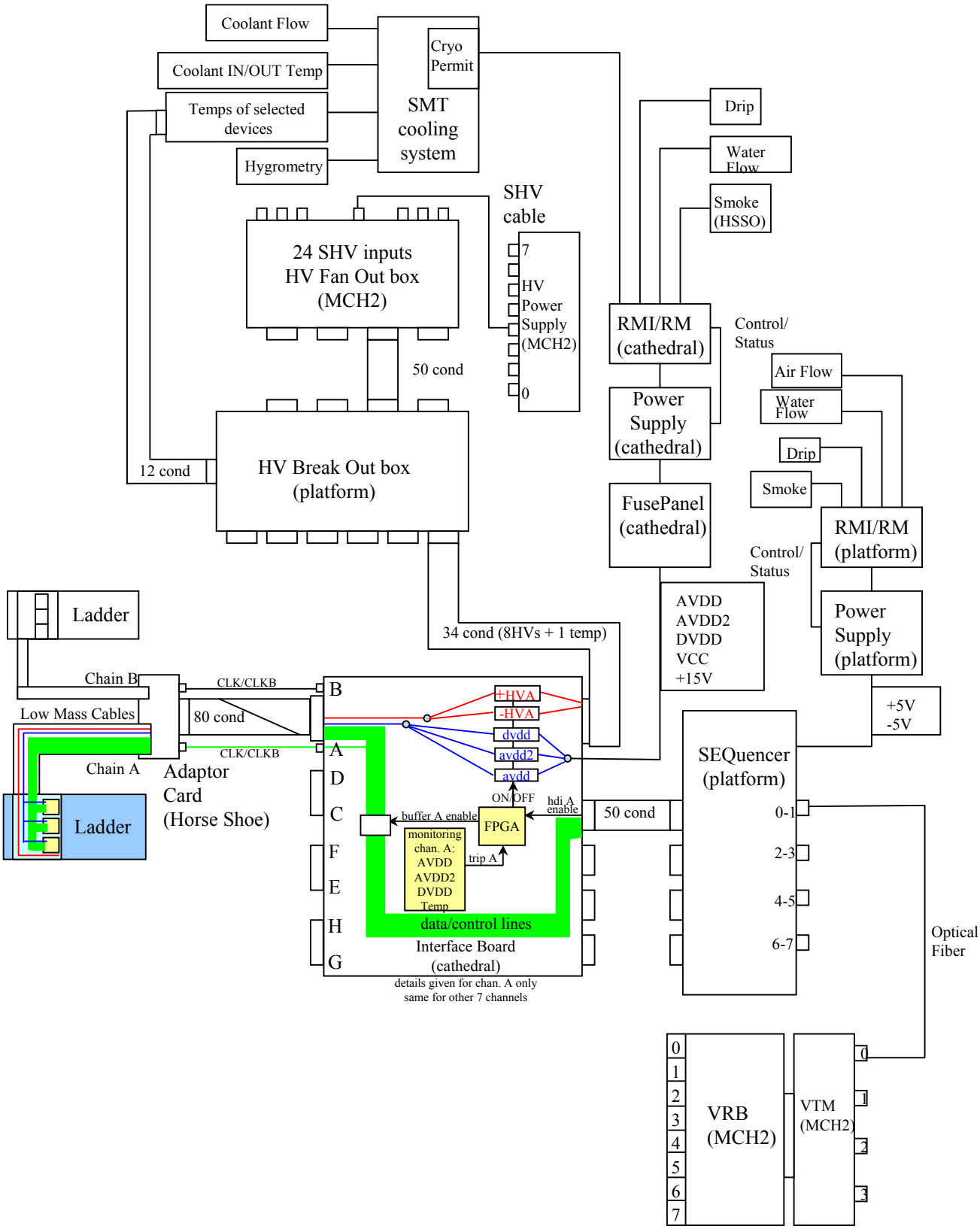
Our silicon detectors are made of 1 or 2 silicon sensor(s) glued to an HDI which carries SVXIIe chips. These chips allow to read out information about the charge collected on the sensor strips, when charged particles went through the sensor(s). For the detector to function properly:

- the silicon sensors must be depleted. This requires 1 (single sided sensors) or 2 (double-sided sensors) HV power supplies.
- the SVXIIe read out chips must be powered. This requires 3 different LV power supplies: AVDD, AVDD2, and DVDD.

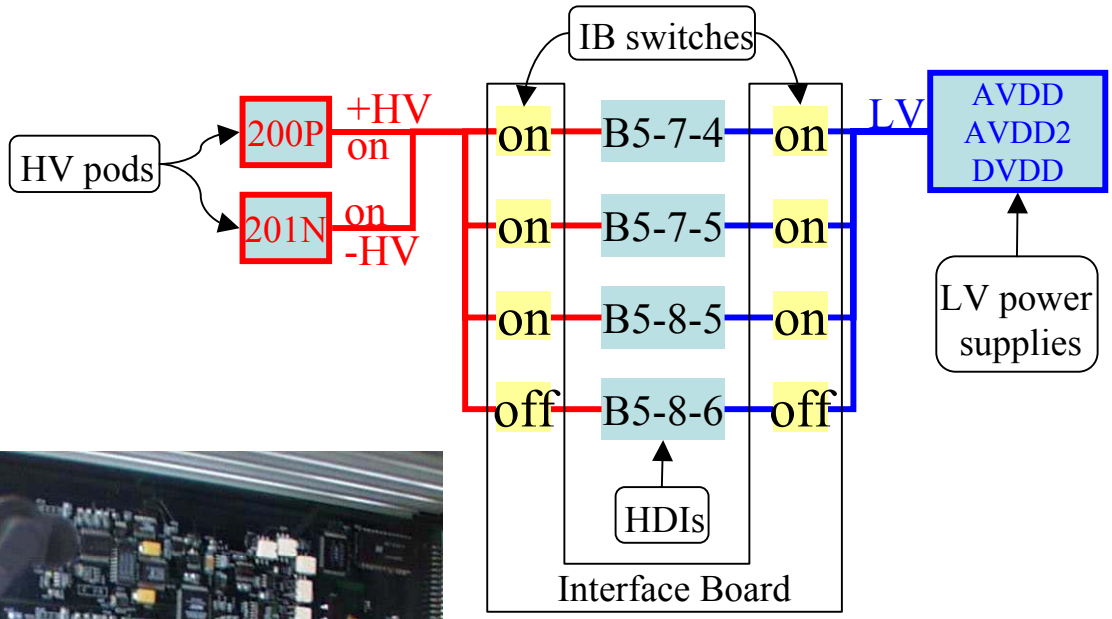
HV and LV are provided by the IB to the HDI which, in turn, provides it to the sensor(s) and to the SVXIIe chips, respectively.

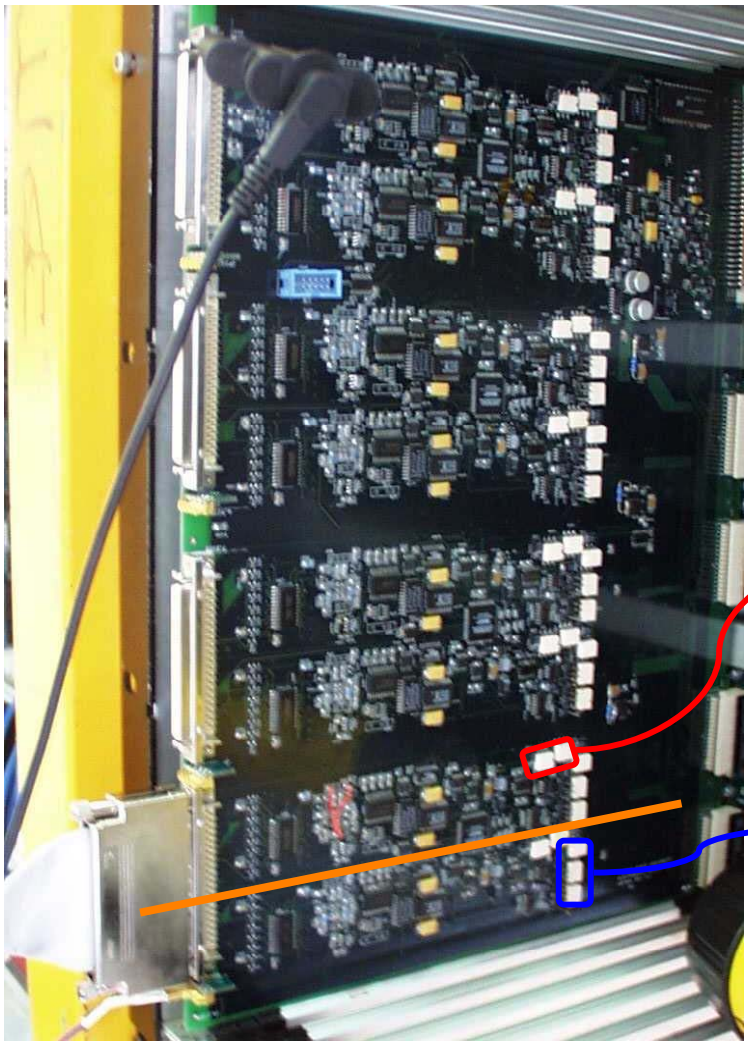





Coolant Flow
Coolant IN/OUT Temp
Temps of selected devices
Hygrometry
Cryo Permit
SMT cooling system
Drip
Water Flow
Smoke (HSSO)
SHV cable
24 SHV inputs
HV Fan Out box
(MCH2)
7
HV Power Supply (MCH2)
0
50 cond
RMI/RM (cathedral)
Control/ Status
Air Flow
Water Flow
Drip
Smoke
Power Supply (cathedral)
FusePanel (cathedral)
RMI/RM (platform)
Control/ Status
12 cond
HV Break Out box
(platform)
Ladder
34 cond (8HVs + 1 temp)
AVDD
AVDD2
DVDD
VCC
+15V
Power Supply (platform)
+5V
-5V
Chain B
Low Mass Cables
CLK/CLKB
80 cond
CLK/CLKB
Chain A
Adaptor Card (Horse Shoe)
Ladder
B
A
D
C
F
E
H
G
+HVA
-HVA
dvdd
avdd2
avdd
ON/OFF
hdi A enable
buffer A enable
FPGA
monitoring chan. A:
AVDD
AVDD2
DVDD
Temp
trip A
data/control lines
Interface Board
(cathedral)
details given for chan. A only
same for other 7 channels
50 cond
SEQuencer (platform)
0-1
2-3
4-5
6-7
Optical Fiber
0
1
2
3
4
5
6
7
VRB (MCH2)
VTM (MCH2)
0
1
2
3

About LV and HV (3)



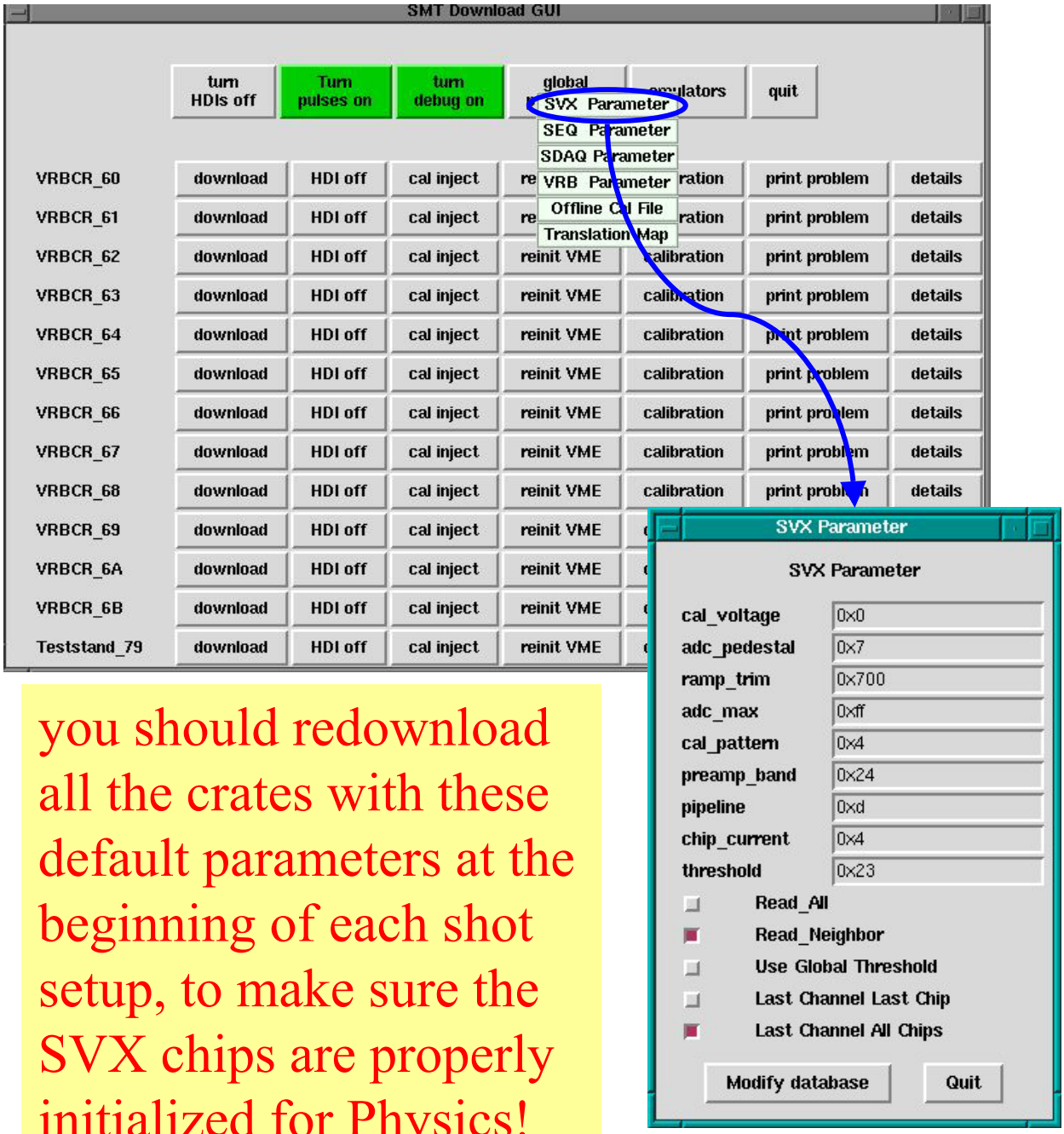


General rule for HDI(s):
Turn ON LV first, then HV.
Turn OFF HV first, then LV.

HV +/- switches

AVDD/AVDD2/DVDD switches

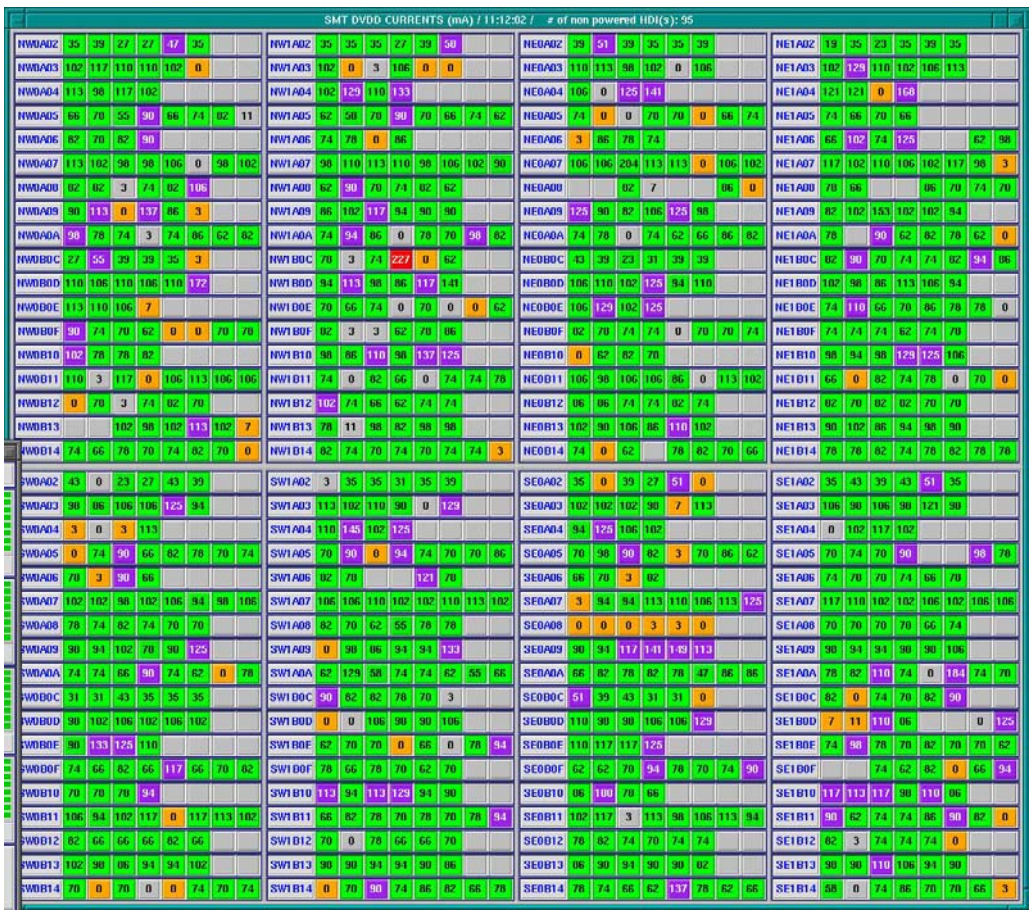
SVXIIe read out chips download parameters



you should redownload all the crates with these default parameters at the beginning of each shot setup, to make sure the SVX chips are properly initialized for Physics!

High DVDD currents and HDI LV Trips (1)

If a lot of HDIs show high currents in the DVDD Current GUI, that usually means that the SVX chips are not read out. This happens when the crates are not in a global run, or when the global run is pause or stalled for some reason. **You should not let the system in that state for too long**.



DVDD Currents GUI color coding:

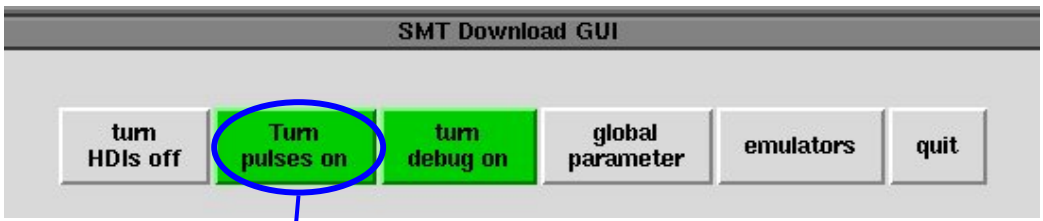
orange:	LV is OFF
green:	LV is ON and I_DVDD OK
purple:	LV is ON and I_DVDD slightly high
red:	LV is ON and I_DVDD high
red/black:	Abnormal state (Trip or Buffer Disabled)
grey:	Channel permanently disabled or not used

High DVDD currents and HDI LV Trips (2)

A way to lower the DVDD current drawn by the SVX chip, is to send trigger to the Sequencer Controllers so as to make the chips work. This can be achieved in several ways, by:

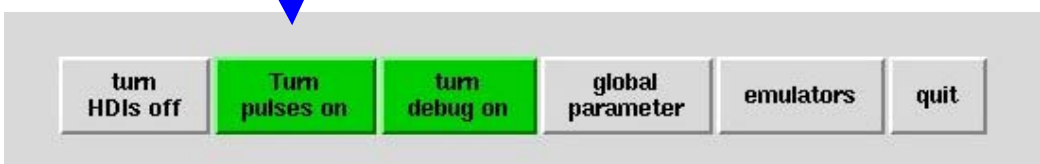
- having the crates in a working Global Run,
- having the crates out of the Global Run and making use of a special run which just sends triggers to the sequencer crates (the VRB crates are not read out). This is described in the « SMT Crater » section,
- sending triggers to the Sequencer Controllers via the 1553, by pressing the « turn pulses ON » button in the SMT Download GUI main page. Do not forget to « turn the pulses OFF » before the Global Run starts or resumes readout of the SMT crates. If you try to read out the crates while pulses are ON, this will result in 100% L1 FEB, because you are sending more triggers to the sequencer crates than to the VRB crates.

Pulses are OFF



Pulses are ON

Pulses are OFF



High DVDD currents and HDI LV Trips (3)

If some HDIs consistently draw too much current (red or purple on the DVDD Currents GUI) you need to REDOWNLOAD them. The first step is to find what VRB they are connected to. This can be done looking at the IB mapping chart:

NW0A02	31	0	23	27	39	31		
NW0A03	102	102	102	110	102	0		
NW0A04	98	94	98	94				
NW0A05	70	78	58	74	66	78	78	11
NW0A06	70	62	66	62				
NW0A07	113	106	98	98	110	3	102	102
NW0A08	82	66	3	74	82	74		
NW0A09	86	90	0	110	86	3		
NW0A0A	117	70	74	3	62	78	0	0
NW0B0C	27	39	35	35	35	3		
NW0B0D	106	102	106	102	98	98		
NW0B0E	130	253	125	7				
NW 0F	86	78	70	62	0	0	70	78
NW 10	74	74	74	70				
NW 11	110	3	106	0	106	106	106	98
NW 12	0	0	3	0	78	70		
NW			106	102	106	94	98	7
NW	3	66	74	62	74	82	70	0

NW1A02	27	35	35	27	35	27		
NW1A03	102	0	3	110	129	98		
NW1A04	98	94	102	94				
NW1A05	66	70	74	70	70	66	82	62
NW1A06	66	74	0	66				
NW1A07	102	113	106	110	86	102	106	86
NW1A08	66	74	70	74	78	66		
NW1A09	82	94	106	98	90	86		
NW1A0A	78	74	78	0	82	70	66	82
NW1B0C	74	3	74	102	0	62		
NW1B0D	90	102	98	86	90	113		
NW1B0E	66	70	70	0	66	0	0	62
NW1B0F	78	3	3	62	82	70		
NW1B10	94	90	98	86	90	94		
NW1B11	78	3	82	58	0	74	74	78
NW1B12	70	74	66	62	74	70		
NW1B13	82	11	94	78	98	102		
NW1B14	78	74	70	78	74	66	106	3

west	0		1	NORTH	0		1	east
66	NW 0	VRB 6609	62	NW 1A02 VRB 6209	60	NE 0A02 VRB 6009	68	NE 1A02 VRB 6809
	NW 0	VRB 6610		NW 1A03 VRB 6210		NE 0A03 VRB 6010		NE 1A03 VRB 6810
	NW 0	VRB 6611		NW 1A04 VRB 6211		NE 0A04 VRB 6011		NE 1A04 VRB 6811
	NW 0	VRB 6612		NW 1A05 VRB 6212		NE 0A05 VRB 6012		NE 1A05 VRB 6812
	NW 0A	VRB 6611		NW 1A06 VRB 6211		NE 0A06 VRB 6011		NE 1A06 VRB 6811-2
	NW 0	VRB 6613		NW 1A07 VRB 6213		NE 0A07 VRB 6013		NE 1A07 VRB 6813
	NW 0	VRB 6615		NW 1A08 VRB 6215		NE 0A08 VRB 6015		NE 1A08 VRB 6815
	NW 0A	VRB 6616		NW 1A09 VRB 6216		NE 0A09 VRB 6016		NE 1A09 VRB 6816
	NW 0A0	VRB 6618		NW 1A0A VRB 6218		NE 0A0A VRB 6018		NE 1A0A VRB 6818
64	NW 0B0C	VRB 6409	66	NW 1B0C VRB 6617	6A	NE 0B0C VRB 6A09	60	NE 1B0C VRB 6015,17
	NW 0B0D	VRB 6410		NW 1B0D VRB 6615-7		NE 0B0D VRB 6A10		NE 1B0D VRB 6015-7
	NW 0B0E	VRB 6411		NW 1B0E VRB 6619		NE 0B0E VRB 6A11		NE 1B0E VRB 6019
	NW 0B0F	VRB 6412	64	NW 1B0F VRB 6417		NE 0B0F VRB 6A12,17	6A	NE 1B0F VRB 6A17
	NW 0B10	VRB 6411		NW 1B10 VRB 6415-7		NE 0B10 VRB 6A11		NE 1B10 VRB 6A15-7
	NW 0B11	VRB 6413		NW 1B11 VRB 6419		NE 0B11 VRB 6A13		NE 1B11 VRB 6A19
	NW 0B12	VRB 6415	62	NW 1B12 VRB 6217		NE 0B12 VRB 6A15	68	NE 1B12 VRB 6817
	NW 0B13	VRB 6416		NW 1B13 VRB 6215-7		NE 0B13 VRB 6A16		NE 1B13 VRB 6815-7
	NW 0B14	VRB 6418		NW 1B14 VRB 6219		NE 0B14 VRB 6A18		NE 1B14 VRB 6819

west	0		1	SOUTH	0		1	east
67	SW 0A02	VRB 6709	63	SW 1A02 VRB 6309	61	SE 0A02 VRB 6109	69	SE 1A02 VRB 6909
	SW 0A03	VRB 6710		SW 1A03 VRB 6310		SE 0A03 VRB 6110		SE 1A03 VRB 6910
	SW 0A04	VRB 6711		SW 1A04 VRB 6311		SE 0A04 VRB 6111		SE 1A04 VRB 6911
	SW 0A05	VRB 6712		SW 1A05 VRB 6312		SE 0A05 VRB 6112		SE 1A05 VRB 6912
	SW 0A06	VRB 6711		SW 1A06 VRB 6311		SE 0A06 VRB 6111		SE 1A06 VRB 6911-2
	SW 0A07	VRB 6713		SW 1A07 VRB 6313		SE 0A07 VRB 6113		SE 1A07 VRB 6913
	SW 0A08	VRB 6715		SW 1A08 VRB 6315		SE 0A08 VRB 6116		SE 1A08 VRB 6915
	SW 0A09	VRB 6716		SW 1A09 VRB 6316		SE 0A09 VRB 6117		SE 1A09 VRB 6916
	SW 0A0A	VRB 6718		SW 1A0A VRB 6318		SE 0A0A VRB 6119		SE 1A0A VRB 6918
65	SW 0B0C	VRB 6509	67	SW 1B0C VRB 6717	6B	SE 0B0C VRB 6B09	61	SE 1B0C VRB 6118
	SW 0B0D	VRB 6510		SW 1B0D VRB 6715-7		SE 0B0D VRB 6B10		SE 1B0D VRB 6116-8
	SW 0B0E	VRB 6511		SW 1B0E VRB 6719		SE 0B0E VRB 6B11		SE 1B0E VRB 6120
	SW 0B0F	VRB 6512	65	SW 1B0F VRB 6517		SE 0B0F VRB 6B12	6B	SE 1B0F VRB 6B17
	SW 0B10	VRB 6511		SW 1B10 VRB 6515-7		SE 0B10 VRB 6B11		SE 1B10 VRB 6B15-7
	SW 0B11	VRB 6513		SW 1B11 VRB 6519		SE 0B11 VRB 6B13		SE 1B11 VRB 6B19
	SW 0B12	VRB 6515	63	SW 1B12 VRB 6317		SE 0B12 VRB 6B15	69	SE 1B12 VRB 6917
	SW 0B13	VRB 6516		SW 1B13 VRB 6315-7		SE 0B13 VRB 6B16		SE 1B13 VRB 6915-7
	SW 0B14	VRB 6518		SW 1B14 VRB 6319		SE 0B14 VRB 6B18		SE 1B14 VRB 6919

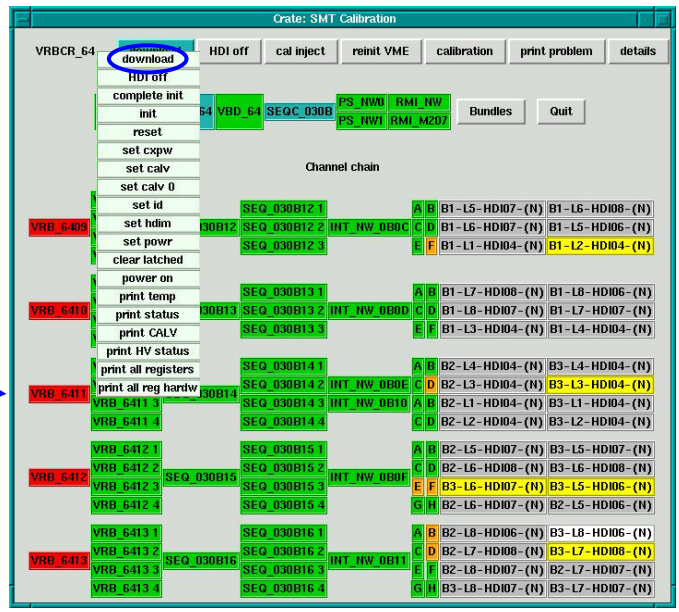
High DVDD currents and HDI LV Trips (4)

Then, go to the corresponding VRB in the SMT Download GUI, and click download on the Left-click menu of the corresponding sequencer.

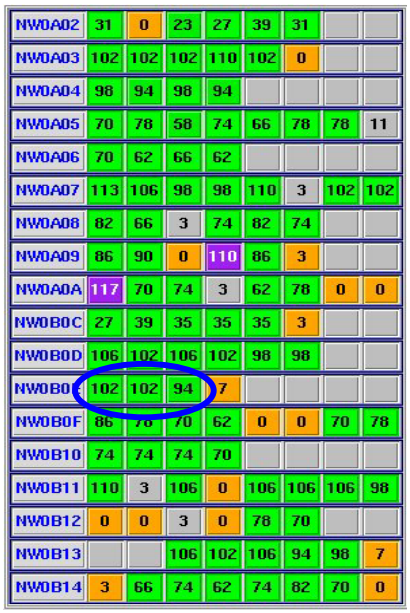
Most buttons have a Right- and Left-click menus.

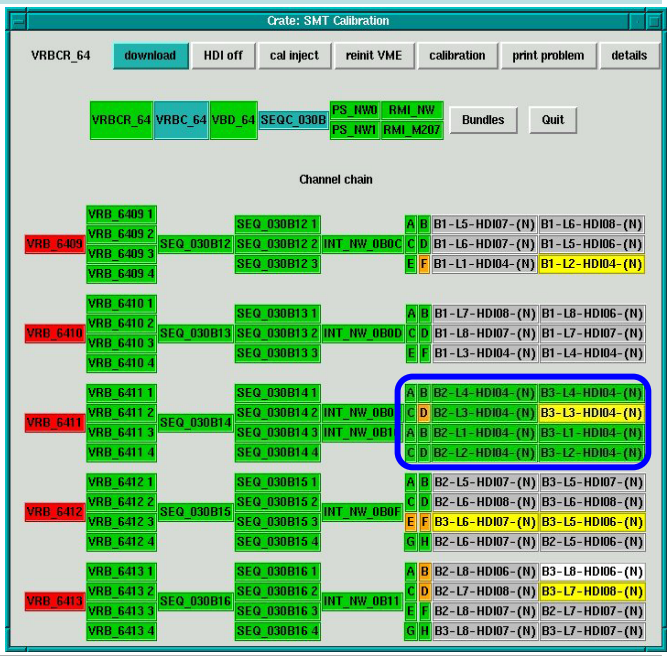
A Left-click on an item of a menu executes that item

A Right-click on a menu closes it.



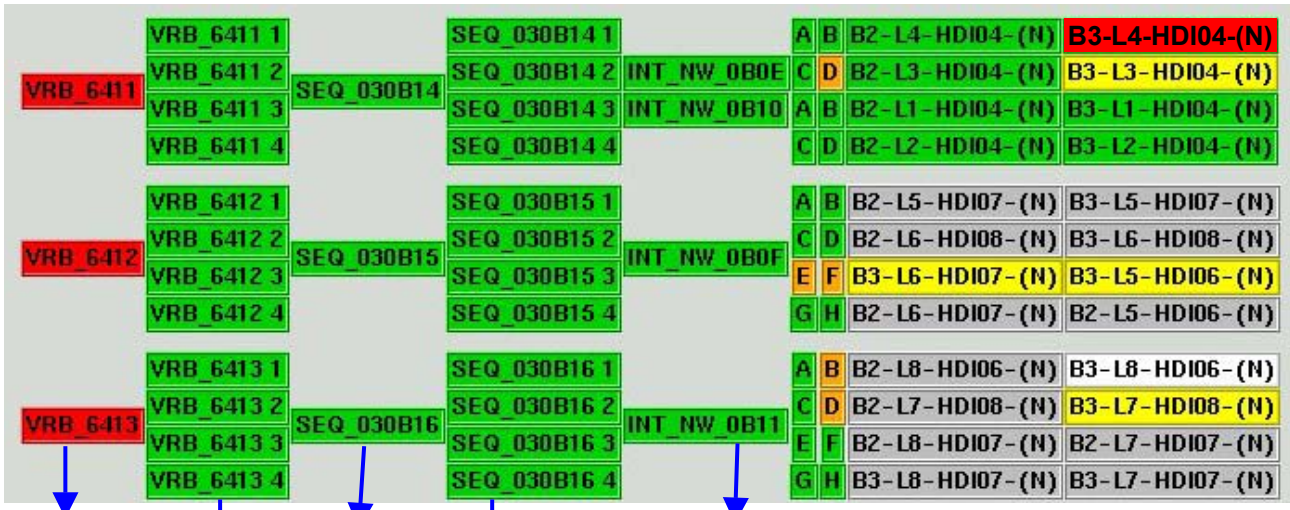
If the download was successful, the HDIs should appear green, both in the Download GUI and on the DVDD Currents GUI:





High DVDD currents and HDI LV Trips (5)

If one or more HDIs appear red in the Download GUI, the download was not successful.

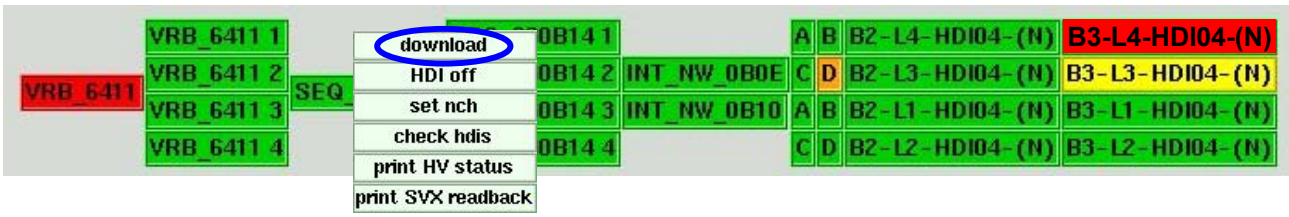


1 Fiber = 2 HDIs

IB Channel Status Color Coding:
- green: OK
- red: tripped

HDI Status Color Coding:
- white: permanently disabled
- yellow: disabled
- grey: enabled and either OFF or unknown
- green: enabled, ON and downloaded OK
- red: enabled, (ON and failed download) or tripped

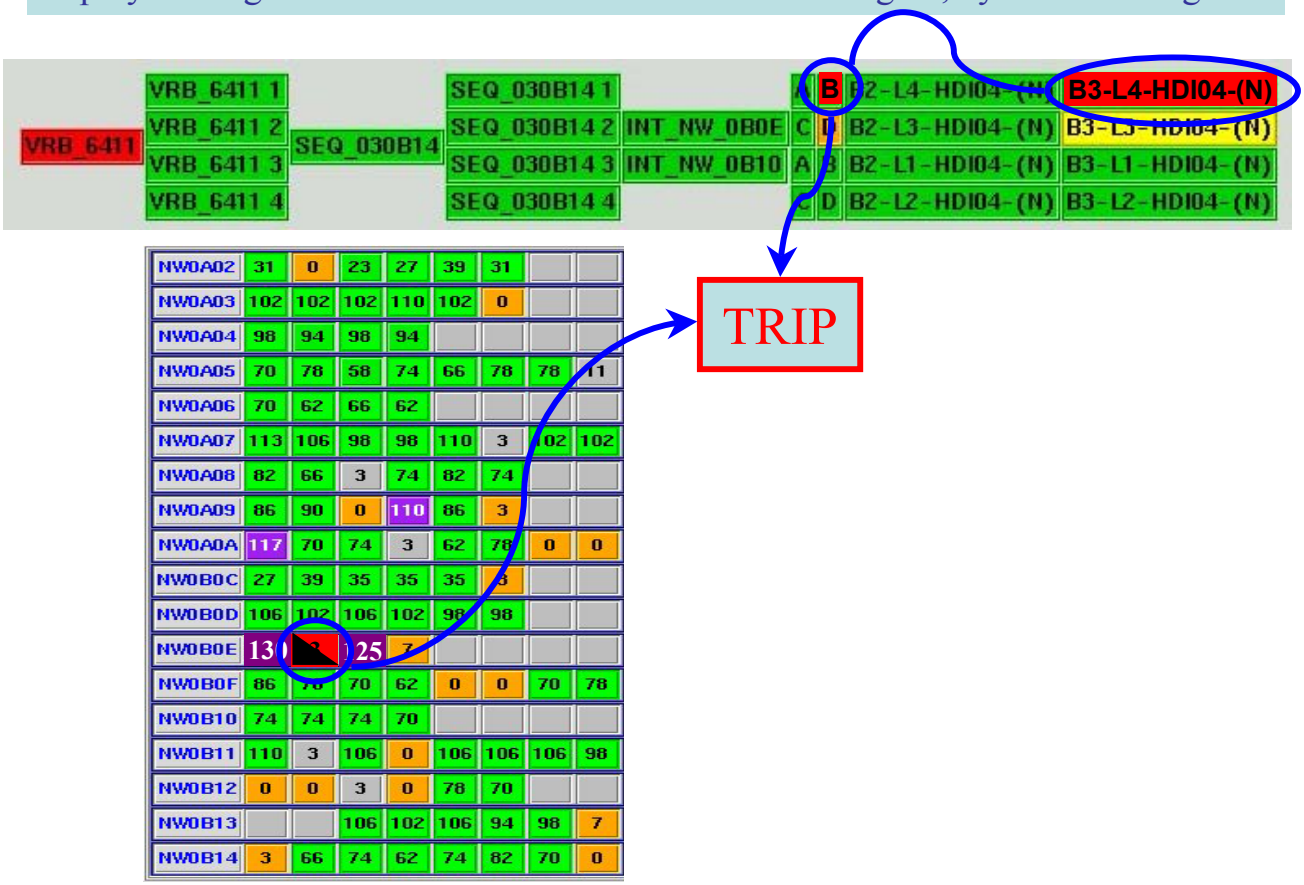
Try to download a few more times at the Sequencer level. If it still does not work, try to download at the corresponding Sequencer Fiber level.



High DVDD currents and HDI LV Trips (6)

1. If this still does not work, it sometimes helps, when an **HDI is reluctant in downloading properly**, to turn it OFF and ON again.

2. In the same way, if an **HDI has tripped**, to recover it, you need to clear the trip by turning the HDI OFF and then turn it back ON again, by downloading it.

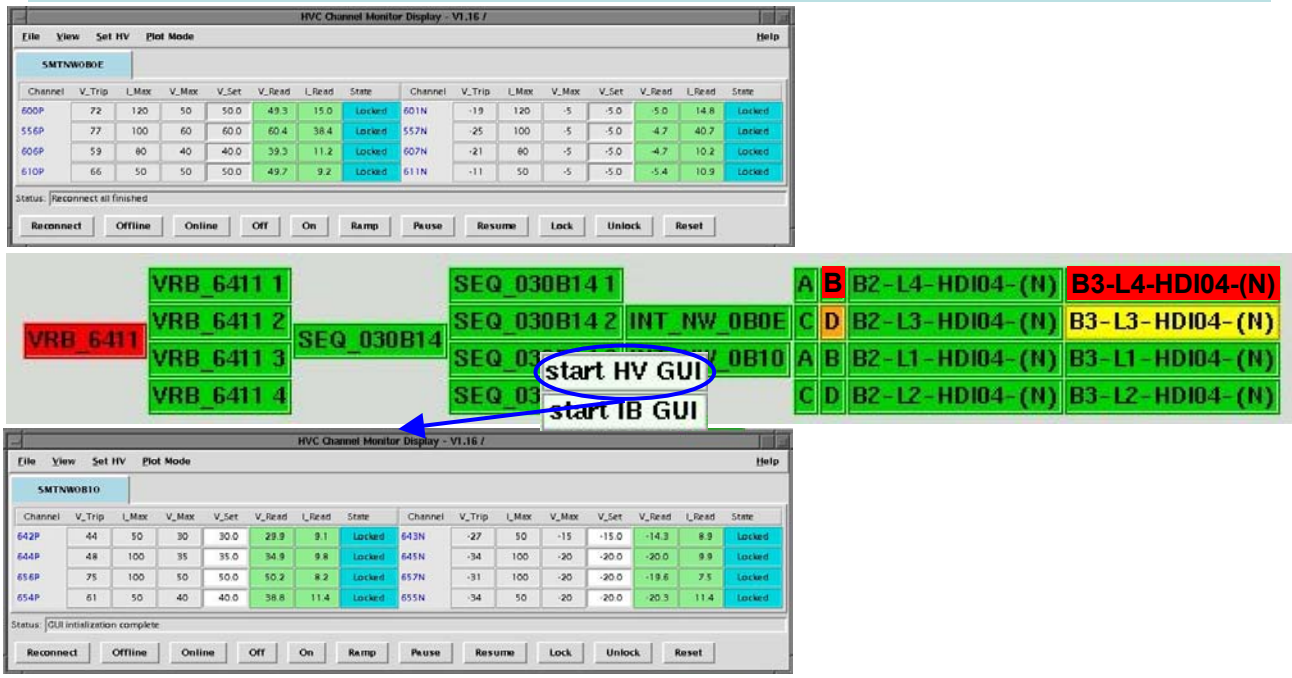


In both cases, if the High Voltage is ON, you will need first, to RAMP DOWN and TURN OFF the HV on ALL HDIs connected to the SAME SEQUENCER as the HDI you want to turn ON or OFF. Otherwise, the Download GUI will not execute your commands.

High DVDD currents and HDI LV Trips (6)

In the left-click menu of each Interface Board connected to the sequencer, the corresponding HDI(s) is(are) connected to, click on « start HV GUI ». For each IB a GUI will pop up showing the pods you need to ramp down and turn off. In our example, HDI B3-L4-HDI04 is connected to sequencer SEQ_030B14. That sequencer is connected to 2 IBs, namely: INT_NW_0B0E and INT_NW_0B10. Start the HV GUI for the first IB:

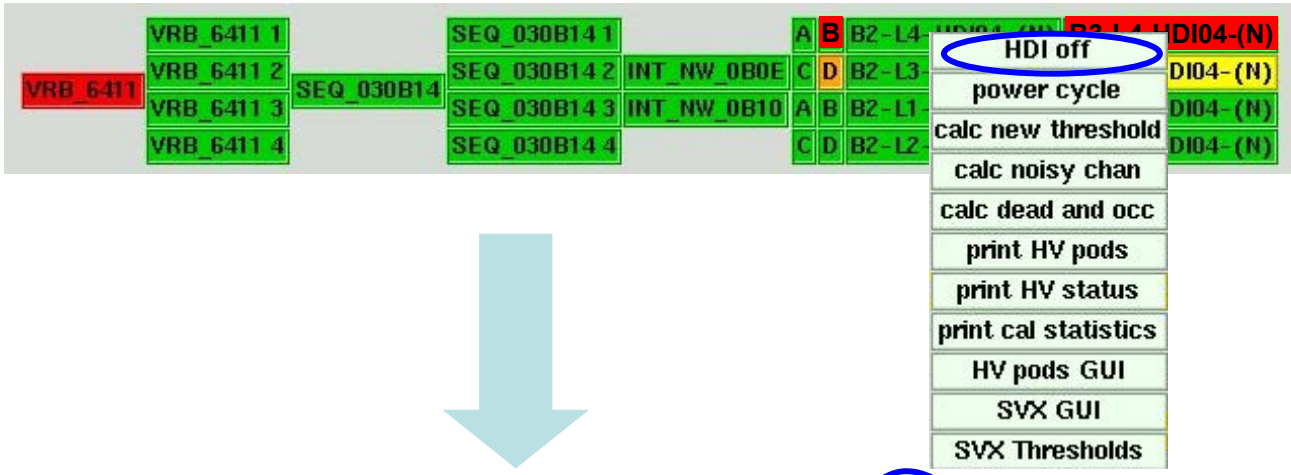
Do the same for the second IB:

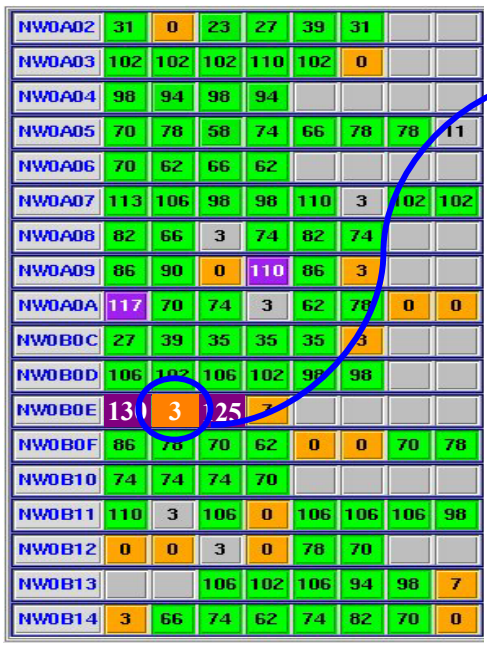


In all the HV GUIs, do « Unlock », « Set HV to 0% », « Ramp », and when the all the « V_Read » values are below 3V, click on « Off ». You are now ready to take care of the problematic HDI.

High DVDD currents and HDI LV Trips (7)

Turn OFF the tripped HDI:





OFF

As explained earlier, try to download the HDI at the sequencer level or at the Sequencer Fiber level.

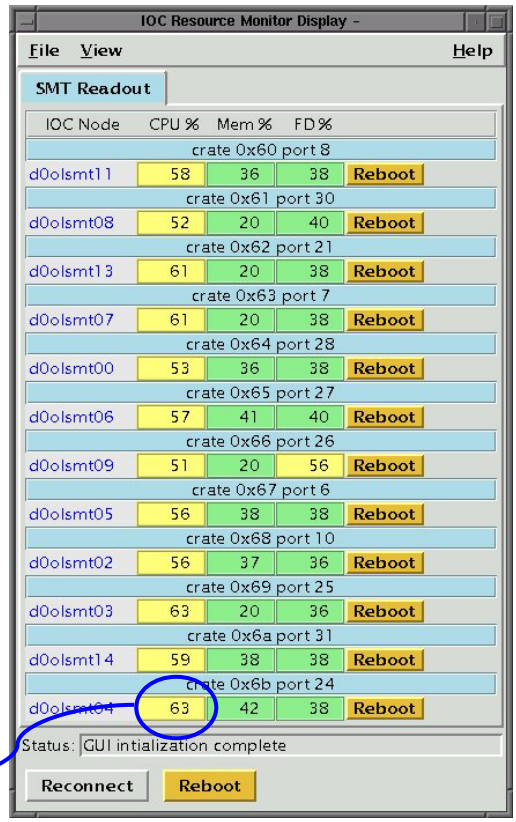
If the download worked, in the HV GUIs shown in the previous page, turn the HV ON, « Set HV->100% », « Ramp ». Once the target voltages are reached, « Lock », « File->Quit », and you are done!

If not, you need to turn the HDI off, disable it as explained in the next page ...

Monitoring (1)

Monitoring of the data quality is done at the strip level in processes which run in the VRB crates Power PCs (IOCs). The status of these IOCs can be looked at from the « Readout IOC Monitor » (from GUI starter, page C, button 6).

Power PCs (IOCs) in the 12 VRB crates



CPU consumption varies between 50 and 75% when monitoring is running

For each VRB crate, the monitoring process captures events from the SBC and makes histograms out of them. A Linux box queries the IOCs one after the other to get their histograms out, so as to allow their browsing through a WEB interface. When an IOC is queried, if the number of events accumulated by the IOC lies between 8,000 and 10,000, an update will be sent for the corresponding crate to the Significant Event System (the result of which is shown in the Alarm Display) for major alarms related to the « Occupancy » and « Dead » categories. An « Occupancy » alarm is set whenever the occupancy of an HDI is greater than 35%. A « Dead » alarm is set if (a) chip(s) of an HDI never appear in the read out stream. Note that disabled HDIs do not generate a « Dead » alarm. You have to take Occupancy and Dead alarms seriously!

Monitoring (2)

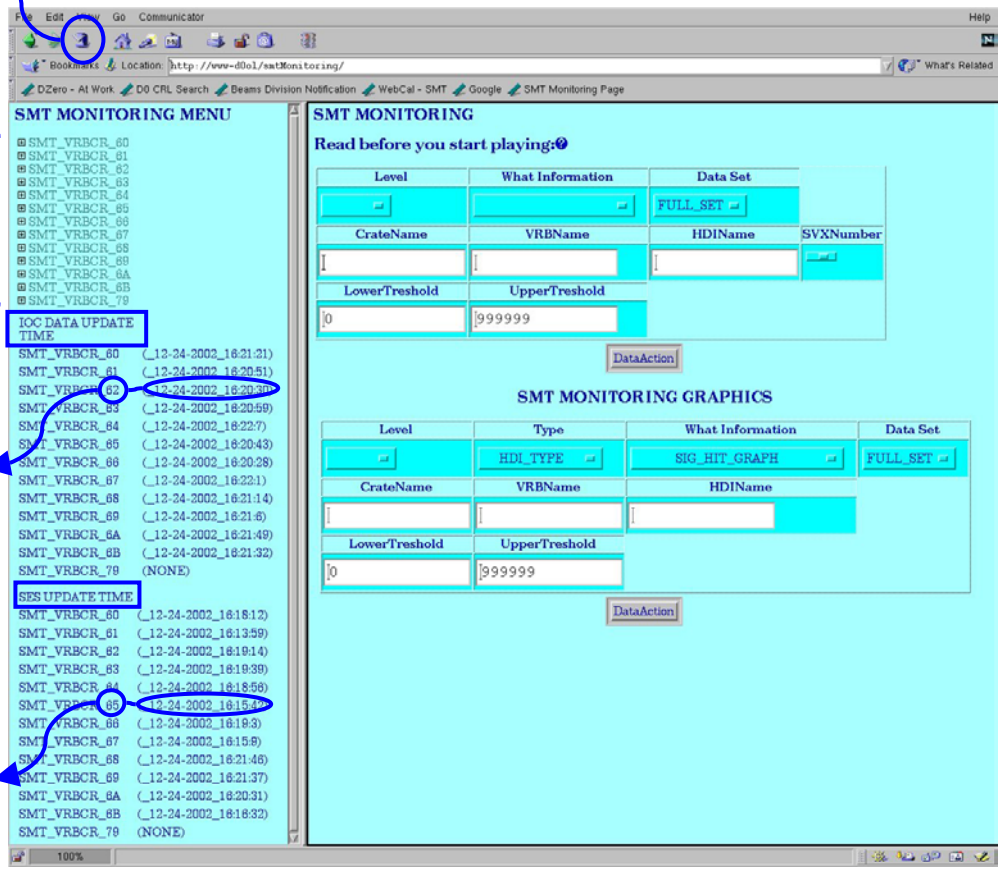
You can connect with Netscape (or you favorite Browser) to the Monitoring Server page (http://www-d0ol/smtMonitoring/). It also appears labeled as « SMT Monitoring Page » in the Netscape Toolbar and in the Bookmarks menu.

click on this to update the page

VRB crates

Last time data were received from IOC in VRB crate 62

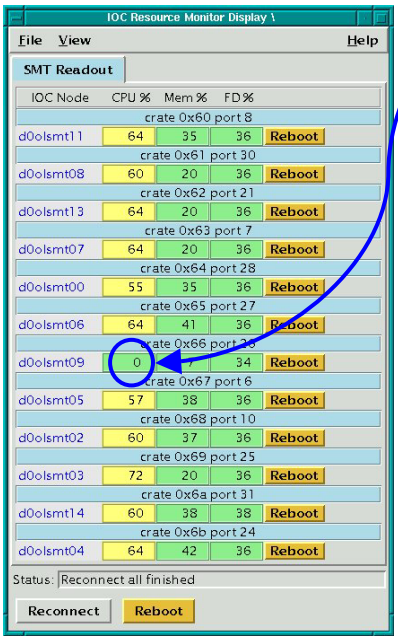
Last time update was sent to SES (Alarm system) for crate 65



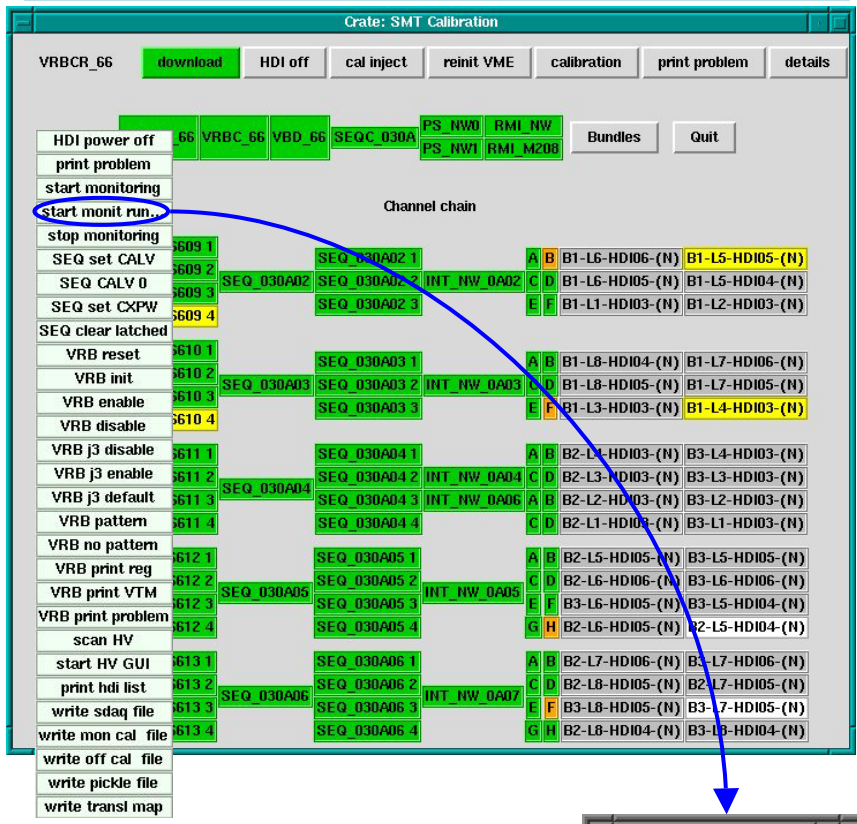
As a general rule, the monitoring should always be turned on during Global Runs (zero_bias or physics). Check this by looking at the IOC CPU consumption, on theReadout IOC Monitor GUI, at the « IOC DATA UPDATE TIME » and « SES UPDATE TIME » on the Monitoring WEB page. The monitoring is started at the beginning of a run and stopped at the end of a run. If monitoring does not seem to be on, during a Global Run, check with the DAQ shifter that the trigger file has SMT monitoring enabled. If not, the DAQ shifter should enable the monitoring and start a new run. You can also start the monitoring « by hand », VRB crate by VRB crate, usingthe crate « details » page in the SMT download GUI, as follows:

Monitoring (3)

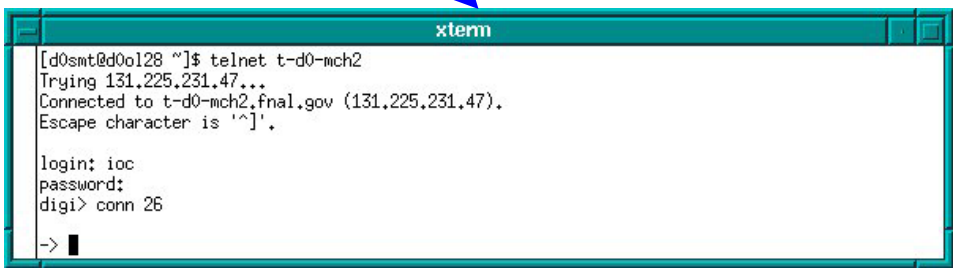
Imagine that for some reason, you need to power cycle crate 66 during a global run. After pausing the run, you cycle the power on crate 66, you wait for the Power PC to reboot, you « Reinit VME » and you resume the run. Now, what you see on the IOC monitoring is that the monitoring process in crate 66 is probably not processing anything:



open the details page for crate 66 in the SMT download GUI and click on the « Start monit run » item in Left-clickmenu of the VRBCR_66 button. In the resulting pop up window, write the current run number and click « Start »

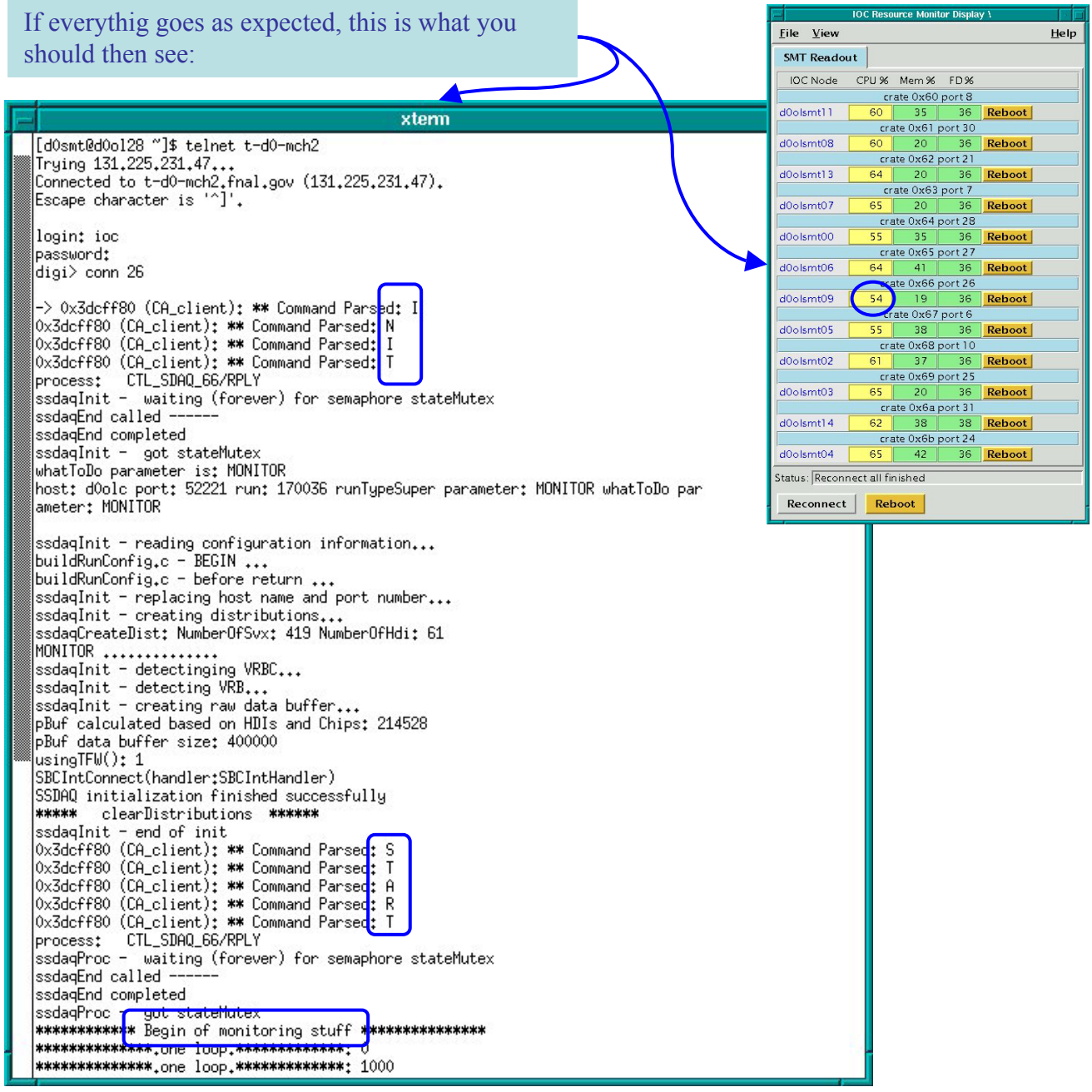


You can open a terminal window on the IOC by connecting to it through the MCH2 terminal server. The login name is: ioc
the passwd: 0nlined0



Monitoring (4)

If everythig goes as expected, this is what you should then see:



After 5 to 10 minutes, you can also check that the « IOC DATA UPDATE TIME » and « SES UPDATE TIME » are current on the Monitoring WEB interface.